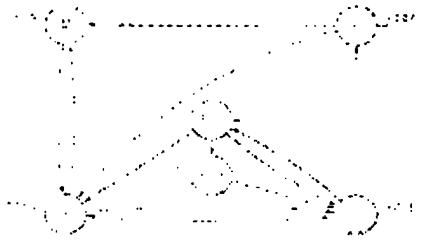
Vertical cached pseudo-exact I-cache compatibility

Patent number: CN1231443
Publication date: 1999-10-13
Inventor: ALIMIRI R K (US); DODESEN J S (US)
Applicant: IBM (US)
Classification:
- international: *G06F12/08*; G06F12/08; (IPC1-7): G06F12/08
- european: G06F12/08B4L
Application number: CN19991001098 19990115
Priority number(s): US19980024321 19980217

Also published as:
- EP0936552 (A2)
- US6345339 (B1)
- JP11328024 (A)
- EP0936552 (A3)
- CA2260285 (A1)

Abstract not available for CN1231443
Abstract of correspondent: **EP0936552**

A modified MESI cache coherency protocol is implemented within a level two (L2) cache accessible to a processor having bifurcated level one (L1) data and instruction caches. The modified MESI protocol includes two substates of the shared state, which denote the same coherency information as the shared state plus additional information regarding the contents/coherency of the subject cache entry. One substate, SIC0, indicates that the cache entry is assumed to contain instructions since the contents were retrieved from system memory as a result of an instruction fetch operation. The second substate, SIC1, indicates the same information plus that a snooped flush operation hit the subject cache entry while its coherency was in the first shared substate. Deallocation of a cache entry in the first substate of the shared coherency state within lower level (e.g., L3) caches does not result in the contents of the same cache entry in an L2 cache being invalidated. Once the first substate is entered, the coherency state does not transition to the invalid state unless an operation designed to invalidate instructions is received. Operations from a local processor which contravene the presumption that the contents comprise instructions may cause the coherency state to transition to an ordinary shared state. Since the contents of a cache entry in the two coherency substates are presumed to be instructions, not data, instructions within an L2 cache are not discarded as a result of snooped flushes, but are retained for possible reloads by a local processor.



Data supplied from the *esp@cenet* database - Worldwide